



Volume 41, Number 3

December, 1974 - January 1975

Dear Friends of the St. Louis Audubon Society:

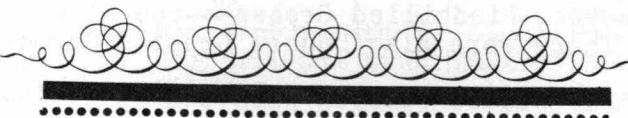
If your household is like ours, particularly at this time of year, there is seldom a mail delivery that we do not find an appeal from some worthy cause in our letter box.

For many years the effort of the St. Louis Audubon Society has been to bring the message of conservation to the public via Screen Tours. The cost of presenting these, as with everything else in our lives today, has continued to rise, and now takes about one-third of our total income. Another third is required to pay for the Bulletin, postage and office expenses, leaving one-third for education and conservation promotion.

The Board has believed and continues to believe that scholarships for classroom teachers to attend Audubon Workshops in Connecticut, Maine, Wisconsin or Wyoming have been one of the best investments of your money. Costs there have risen also, so that now the fees are more than twice those of ten years ago.

To assist in maintaining our past level of assistance to conservation, will you please send a contribution today using the enclosed envelope.

Sincerely,
J. Marshall Magner, President



SANCTUARY FUND CONTRIBUTIONS

In Memory of Earl Hath

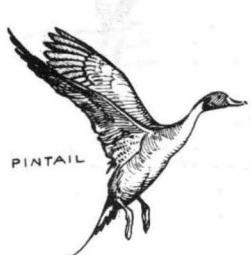
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In Memory of Mr. and Mrs. A. H. Beard

Mrs. Earl H. Hath

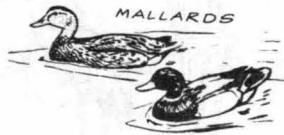
In Memory of Cecil Criger

Mrs. Earl H. Hath



TULE LAKE

Warren Lammert



This is Tule Lake--- in northern California, just a few miles from the Oregon border, part of the Klamath Basin National Wildlife Refuge, situated in southwestern Oregon---in Upper Klamath and Klamath Forest Refuges---below the border in California, Lower Klamath Tule and Clear Lakes. Here is one of the outstanding waterfowl areas in the world, an area of a million acres, once a land of shallow lakes and extensive marshes. Rich soils and abundance of feed attract migratory ducks and geese in huge numbers. During the past 60 years most of the natural wetlands were drained for agriculture, but the birds did not alter their ancient routes.

In fall, thousands of birds winging southward on the Pacific Flyway, turn inland to stop and rest. Others veer westward from the Snake River in Idaho, and the Great Salt Lake in Utah to reach this ancestral gathering place; like a funnel or an hourglass, through which the major part of the waterfowl of the Pacific Flyway migrate. Concentrations are phenomenal with as many as 2 million pintails, 300,000 mallards, 200,000 widgeon, 300,000 whitefronts, 300,000 cackling geese, 200,000 snows, and almost all of the Ross Geese in North America. Upper Klamath holds at times, one million ruddy ducks, 200,000 shovellers.

Lower Klamath is not far from Tule Lake. Clear Lake is the principal nesting area of the white pelican and has the oldest historical herd of pronghorns, as well as nesting and courtship grounds for sage grouse flocks. It is also famous as a nesting area for great numbers of waterfowl and a diversity of species. Tule Lake has the largest annual concentration of waterfowl on the North American continent. It lies in the midst of rich grainlands which were once the bed of a 100,00 acre Tule Lake. Today, it has 13,000 acres of water, filled with aquatic plants and surrounded by grainfields, an ideal habitat for migrating birds.

The basin is so large that a visitor might spend a month and not see it all. For that reason we concentrated mainly on Tule Lake. Following the tour markers and without stopping it is at least a two hour drive. This is dry country, not over ten inches of rain a year--and in late September, it is hot and dusty. Most of the refuge roads are not paved and even in an air-conditioned car the dust at times was almost suffocating. There were tremendous numbers of Western, Eared, Piedbilled Grebes--none of us had seen anything like their numbers. There were also Double Crested Cormorants.

The country is extremely pleasant, even with the dust-- beautiful arid areas with treeless foothills, and an occasional view of a snow covered peak. The tule is a large bulrush which grows on overflowed land. It is perfect cover for waterfowl.

The color of the barley and wheat fields was magnificent. Birds come into the lake around nine o'clock each morning, after feeding on nearby grainfields that had been harvested. They go out to feed around four thirty in the afternoon. Late one day, as we were standing on a dike, we noticed a great number of mallards jumping over the road, which was on top of the levee. These birds would leave the tule grass and land almost vertically in a ditch on the other side of the road. I walked up to this point and could hear the feeding mallards, hundreds of them in the deep grass and not a duck visible.

One cinnamon teal was spotted by our group, but whistling swans hadn't arrived. Snow, Ross and cackling geese were still farther north but there were shovellers, pintails, mallards, ruddys and teal almost everywhere. We saw a few mule deer, and late in the afternoon, along the roads, pheasants obviously coming out for gravel.

Throughout the country sage brush was in bloom, a lovely yellow. But of all the thrilling sights we saw, the white fronts were the best. Trading back and forth, morning and afternoon in formation, or in pairs, these birds were beautiful. However, one morning while we were standing on a dike, they came in from the northeast, the sun on them just right, their colors beautiful. On and on they came, over the lake, mapleleafing near the tules, flopping in as only geese can do.

There were pelicans at Lower Klamath. One day they were soaring so high we could barely see them with binoculars and then only when the light was right. Three avocets were feeding near a road at Tule.

The sheer magnitude of the basin is hard to visualize. Every lake, every ditch and pond, seemed to have birds on it. The beauty of the country lying as it does, east of the cascades is soothing, different and interesting. The blue water, the mammoth lakes, with enormous numbers of all kinds of birds. Lower Klamath, established in 1908 by Theodore Roosevelt, was the first national Wildlife Refuge in North America. Clear Lake, the second, 3 years later, is an open wind-swept lake, surrounded by sage brush covered plains. Tule Lake and Upper Klamath were established in 1928. It was not until 1958 that Upper Klamath Forest Refuge was opened.

The red necked grebe is seen only at Upper Klamath, and in Forest Refuge; the green heron at Upper Klamath and the goshawk at both of these areas. This is also true of the blue and ruffed grouse. Sage grouse are only at Clear Lake, and mountain quail at Upper Klamath--chukar at Tule and Lower Klamath--the calliope hummingbird at Upper only. Williamson's sapsucker, white headed and 3 toed woodpeckers can be seen at Upper Klamath and the Forest Refuge if you are lucky. The black headed grosbeak at Upper only--and on and on.

The next time you take a trip keep this Basin in mind, for it is a fabulous birding place. Plan to spend at least a week or more in the spring or fall. Our trip being primarily for waterfowl, made it almost impossible for us to see perching birds. We did see western and mountain bluebirds, chestnut backed chickadees, yellow headed blackbirds, and even a snow bunting. Along a road, we saw five black billed magpies sitting in a tree. And of course, ravens and many other species indigenous to St. Louis. We saw California quail, greater scaup, gadwall, blue winged teal, redhead, bufflehead and even sandhill cranes. If you don't mind dust, you'll love this area. A truly great sight to enjoy. America should be proud of what has happened in the Klamath Basin.



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FROM MY NATURE NOTEBOOK

Millie Blaha



The air was oppressive, humid, and pregnant with rain. Not a leaf stirred. The stillness of early evening was a startling contrast to the day-long symphony of bird songs. Suddenly the silence was pierced by the shrill whistle of a broadwinged hawk - a plaintive p-wee-e-e somewhat like that of the wood peewee. Each spring this hawk returns to its woodland home after wintering somewhere between southern Florida and Central America. Since it is a somewhat unsuspicious bird, I have been able to see it fairly close when walking in the woods. As I approached its range, it would fly only a short distance before alighting again, making it possible to see its broad, rounded wings and robust body, so characteristic of the Buteos or buzzard hawks. In flight, the almost equal, broad black and white bands on its tail and its heavily barred breast make its identification unmistakable.

Once, for about half an hour last summer, I watched this hawk, perched on a dead branch of an oak tree outside the window. Ready to fly into action if a large insect, mouse or small reptile appeared on the forest floor below, the bird would not only be satisfying its appetite but also filling its niche in the balance of nature. To find the broadwing's nest, made of sticks and lined with bark, is a challenge, for it is usually high in the crotch of a tree. Perhaps in winter when the leaves have fallen, its location will be revealed.

A loud "Wheep,wheep" indicated that the flycatcher was nearby, probably waiting to snatch moths and other insects flying in the shadowed woods. Mr."upside-down bird", the white-breasted nuthatch, was busily stuffing himself with dessert from the feeder filled with a mixture of peanut butter, cornmeal, cereal and bacon fat.

Bursting forth in a crescendo chant which vibrated through the woods was the emphatic "teacher, Teacher, TEACHER" of the ovenbird which sang louder and louder as it repeated this sound. Such music! Since the ovenbird spends much of its time on the ground among the thick growth of buckberries, it is difficult to see it even during the day. But I was fortunate to catch a glimpse of it this spring. Its nest, built on the ground, has an arched top with rootlets and grasses and leaf skeletons formed in the shape of an old-fashioned out-door oven. It is difficult to see. The thrill of finding one several years ago in Door County, Wisconsin, still lingers in my memory.

Suddenly there was silence!

Since there still remained about an hour before darkness would set in, my husband George and I decided to walk in the quiet woods, to collect our thoughts and re-charge our spirits for the morrow. It appeared as though there would be no sunset. The sky was an almost blinding opaque white behind the leaves of the trees.

Drinking in all the delicious wet woodland smells resulting from several days of off-and-on rains, we wandered for almost an hour along trails bordered with the fragile Indian physic and mountain laurel, blooming in all its splendor. Common names of plants can often be confusing, but sometimes they tell us something about the plants. For example, the name Indian physic(also called American ipecac) indicates that American Indians once used this plant for internal cleansing, a ceremonial requirement for some tribes.

At our feet were the tiny flowers of yellow star grass, which isn't a grass at all, but a member of the Amaryllis family. Buckberries and the bristly locust were also in bloom. To our surprise and delight, we came upon several large clumps of ghostly white Indian pipes. These one-flowered plants which lack chlorophyll are in the same family as the rhododendron.

We continued on in silence. The only sounds at 3000 feet elevation were those made by our footsteps as we walked on carpets of moss and leaves softened by the recent rains. The shrill call of the pileated woodpecker reminded us that we were intruders in its woods. As we reached the crest of a ridge, the sun suddenly appeared as a golden disk and bathed the sky with a glow as though it had been colored with diluted orange sherbet - a striking contrast to the blue-gray haze beneath it which obscured the mountains.

As the trail curved up and down through the woods, the sun finally slipped out of sight. The sky took on the appearance of alternating layers of lavender and pale orange chiffon. Dusk was quickly shrouding the now silhouetted trees in the descending darkness of night, reminding us that new adventures in nature would be in store for us tomorrow - for nature is never the same each moment, each day, each year.

Focus on the



Betty Wilson

STATE LEGISLATION

AN ENVIRONMENTAL AND ECONOMIC "MUST"

Flood Plain Zoning

In recent years the Federal Government has spent many billions of dollars to indemnify flood victims for property losses. Since 1936 more than \$7 billion have been spent to construct flood protection works. Yet annual flood losses amount to about \$1.25 billion and are continuing to increase, largely as a result of the use of the nation's flood plains.

The new Flood Disaster Protection Act of 1973 in effect forces the nation's flood-prone communities to practice some form of flood plain management for new construction in areas subject to flooding. Recognizing that we can no longer tolerate the losses of lives and property that result from the unwise and unrestricted use of our flood plains, the Congress enacted this legislation to reduce the toll from one of the most destructive hazards facing the people of the United States.

The Flood Plain Zoning Bill (HB 1366) was introduced in the legislature during the last regular session. The bill provides for minimum state control over flood plain development. Adoption of the proposed controls, supported by Governor Christopher Bond, is needed to qualify most of the state for the federal flood insurance program.

The measure would require the 94 counties that now lack zoning to adopt standards of flood plain development by July 1, 1975, after such areas are designated by federal and state authorities.

If no local action is taken, the state standards on development will be in effect. Another bill similar to HB 1366 will be introduced in the 1975 session of the Missouri Legislature as part of the Governor's package.

THE CONGRESS

Good News

A major action was taken by Congress as it recovered after the election recess. It passed the landmark \$11.8 billion Mass Transit Aid Bill.

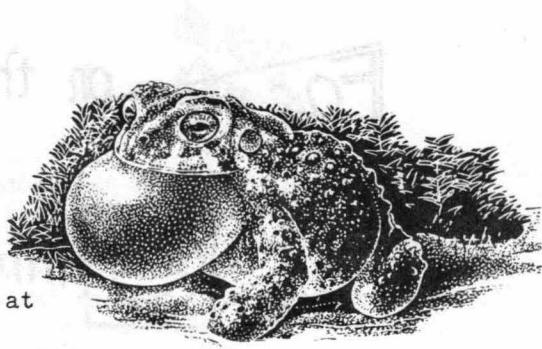
Safe Drinking Water legislation, long overdue, has passed both Senate and House. There are major differences in the House and Senate versions, but early action by a Conference Committee is expected.

Despite the public's acceptance of the notion that its drinking water is altogether safe, evidence to the contrary has been accumulating. Extrapolating from a U. S. Public Health Service study, it is estimated that eight million Americans are drinking potentially dangerous water.



DENIZONS OF THE NOT-SO-DEEP

Katherine P. Chambers



(Based on samples taken from the ponds at
Pickering's Sunny Ranch)

To the casual observer, life in small ponds and lakes seems drab compared to the marvels of ocean life. But a closer look reveals an almost unbelievable variety of

plant and animal life. Around the edges are the higher plants - cattails, rushes, arrowleafs, water purslane, and a few ferns and mosses. Over the surface are the floating plants like water shield, water lilies and the smallest flowering plants in the world, duckweed. Some flowering plants - Elodea, Myriophyllum and Najas - spend their entire lives under water. Elodea and Myriophyllum were usually found near the surface, but Najas was found with its tops six feet below the surface of the quarry lake, and extended downward about nine feet farther.



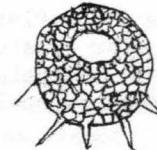
Part of a Hornwort
(natural size)

There is even greater variety among the algae. "Algae" has become almost a dirty word since excess fertilizer washed into the water has caused extensive blooms whose decomposition removes too much oxygen from the water. However, algae are the supporters of the pond. From the stoneworts which are sometimes more than a foot long to the tiny plankton only a few microns in diameter, they are efficient solar engines, trapping the sun's energy for themselves and their neighbors.



A Desmid
(highly magnified)

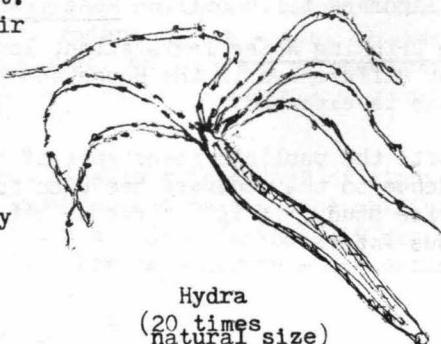
The surface of the pond may appear empty, but if samples from a plankton net are examined under a microscope, one can see myriads of tiny jewel-like desmids and diatoms as well as flagellated algae and protozoa moving about with their whiplike tails. Deeper down one finds the hornworts with their rather stiff filaments, and the long threads of Spirogyra matted together to form the so-called pond scum. One September the lake with the dock was covered with poisonous-looking green splotches looking like pieces of a burst balloon. These turned out to be a most undesirable form of blue-green algae, which Mr. Pickering killed with chemicals.



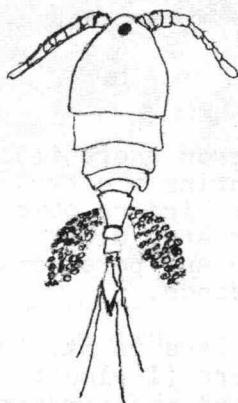
Centropyxis
A Protozoan
200x

Frogs are the most obvious of the animals - making you feel most unwelcome as you walk about the pond. Just as you get to within about ten feet of them they leap into the water. Dragonflies and damselflies are not quite so timid (or could it be not quite so alert?) They often keep hanging on to reeds or sedges until your hand is just a few inches away. Two damselflies flying tandem can frequently be seen. Sometimes they are mating, but often when they alight on plant stems, you can see that the male is helping the female hold on while she lays her eggs.

In springtime newts can be seen near the surface. Usually they just rest or move slowly, but can dive suddenly when disturbed. Water scorpions also spend much time "lazing" on the surface and are so sluggish that they are easily caught. Bull frogs and leopard frogs also can be seen with their eyes just above the surface. The largest animal I saw was a four-foot snake slithering across. Schools of whirligig beetles are fun to watch. When you approach them from the side they move away in a body as if repelled by a magnet, but if you are on a dock above them they are fairly easy to catch. During the March freeze, some of them were moving under the ice - slowly it is true, but still moving.



Hydra
(20 times
natural size)



Cyclops with egg cases

The movements of some of these Vorticella, a stalked protozoan, mits it to contract suddenly to length. All insect legs are has a sort of steam shovel stretch out suddenly for its get their name from the levers that enable them to pop quickly

Tadpoles, small crustaceans such as water fleas, and many of the immature insects are vegetarians, feeding directly on algae and other underwater plants. These animals are then eaten by the predators, dragonfly and damselfly naiads and adults being probably the most voracious. Midge larvae and small crustaceans such as Cyclops are more or less omnivorous, feeding largely on debris intermixed with algae. Frogs of course feed on insects. Even Hydra and some of the protozoa are carnivorous. Hydra can paralyze and engulf a water flea almost twice its size.

Bottom samples contain such creatures as planarians, segmented worms, leeches, some insect larvae and fingernail clams. These are largely scavengers and can often be kept in the laboratory with practically no care. Surprisingly, many of these are brightly colored. Some are bright red, others transparent with multicolored spots, and some of the are tastefully decorated in orange, brown and green designs.



A planarian

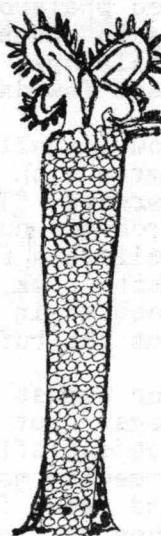
10x

creatures put our machines to shame. has a spring in its stalk which per- less than one tenth of its original types of levers, and the dragonfly mouth attachment which it can prey. The tiny black springtails at the rear ends of their bodies up and away.

Even our current societal movements are represented. Recycling is carried to what most of us would consider an extreme by a rotifer that uses its own excrement to build the tube in which it dwells. Some of the water bugs are prize women's libbers. The female cements the eggs to the back of the male, who has to carry them around until they hatch. I picked one of these heavily laden fellows out of the water with no difficulty. The eighty eggs he was carrying soon hatched. I kept a few to study, but put the rest back into the pond.

Considering that the ponds at Sunny Ranch, with the exception of the lake at the picnic grounds, are only about ten years old, the number of species they contain is surprising. I have found over 150 species including representatives of all the major plant and animal divisions except the few which are strictly salt water forms. Some fish were brought to the pond near the house from Quarry Lake, but with this exception, all the pond inhabitants got there without man's intentional help.

Rotifer
in tube
built from
its own
excrement
50x



How did they find their way to these ponds? It is easy to understand how the plants and many of the smaller animals managed, since they are able to form spores, seeds or resistant cysts which make up part of the dust and are carried by the wind. Fish are found only in the ponds which were stocked, but frogs are abundant in all the ponds. To get there without help they had to travel at least a mile. Another possibility is that their eggs or larvae were caught in some of the algae and transported by another animal to a new location. Snails might also have made it in this way. However, the little fingernail clams must have been brought in on the feet of birds.

There are still many mysteries buried in these ponds. Perhaps if we learned more about their inhabitants, it could help us in solving some of our environmental problems.



St. Louis Area Summer and Fall Birding

J. Earl Comfort

The St. Louis Area birding from August 15 through October featured shorebirding, with 31 kinds showing up. By far the best shorebird species during the period was the ruff. Fall warblers, confusing and otherwise, gave the birders some difficult as well as easy identification. Best was a black-throated blue. Some migrant sparrows also gave the listers fits. But patience and perseverance gave an excited group a rare clay-colored among several other kinds.

On the 27th of October a common (uncommon) loon at Creve Coeur Lake in St. Louis County set the hot line in motion, resulting in many loon listers (I almost said "looney listers"). Some of the other rarities that thrilled the birders were knot, northern phalarope, red-shafted flicker, Bohemian waxwing and Swainson's hawk.

The Audubon Society and Webster Groves Nature Study Society in co-operation featured combined area bird outings. Some of the dedicated leaders were Kathryn Arhos, Dick Anderson, Viola Bucholtz, Kurt Wesseling and Jack VanBenthuyzen. As usual, the August A. Busch Wildlife Area in St. Charles County was the most visited region.

On the 28th of August Mildred Schaefer and Helen Wuestenfeld were delighted to find an extremely rare ruff at a mud flat in St. Charles County near West Alton in the same spot where Mildred and Lynn Schaefer first listed a hot lined red phalarope in July. Naturally the ruff was also put on the hot line which again caused a stampede to the area. The ruff, more accomodating than the phalarope, gave several lucky birders an opportunity to study it during the next few days.

You actually have to see a ruff in breeding plumage to believe it. You may agree with the little boy who saw a giraffe for the first time and told his parents, "There ain't no such animal". As far as our area is concerned it produces no gaudy ruffs like the ones pictured in the bird books. Would you believe a ruff in its breeding plumage shows vivid colors ranging from pure white neck ruffs to a black one, and some are two-toned. Picture a turkey gobbler in display and you have a ruff in display at the other end of his body. But the ruff is far more fantastic.

Our August ruff in its nondescript plumage somewhat resembled a lesser yellow-legs. But there's more almost unbelievable history relating to the ruff. Not satisfied with its two distinctly different plumages (breeding and non-breeding males), this species insists on having two names, ruff for the male and reeve for his mate, which is always dressed plainly. Back in the days when you could buy something with a nickel and a two cent stamp would send a first class letter all over the country the ornithologists believed a ruff and a reeve were two distinct species. And who could blame them?

The ruff-reeve is an eleven inch shorebird with legs that vary in color, the prevailing one being orange-yellow. Fall males and females are similar. There is an oval-shaped white spot on either side of the tail near the rump. As stated, the reeve is a plain job resembling a lesser yellowlegs. The male in breeding plumage has been described, albeit inadequately, and, as mentioned, you have to see a ruff in display to believe it. Not many of us have had this pleasure.

On October 13th there were 51 Audubon nature students at the famous Sunny Ranch Wildlife Refuge, which is capably operated by Burrell and Ruby Pickering in Warren County, Missouri. As always, the genial Pickerings went all out to make the event an outstanding occasion. And, as always, various nature field trips were enjoyed, thanks to the many competent and dedicated leaders. Nature photography was in the capable hands of Ed and Lee Mason.

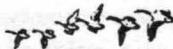


WHAT'S A NATURE PHOTOGRAPHER?

Lee Mason

Until quite recently "nature photography" was almost synonymous with "bird photography." Today nature photographers take cameras high into the air, underwater, and underground. They climb mountains, tramp hills, valleys, prairies, deserts, beaches; they wade streams and slosh in swamps; all in search of some of the 350,000 different plants known to botanists and always with the hope of a new find; or in pursuit of some of the over one-million varieties of animals on earth. The mineralogist-petrologist photographers (those who study minerals and rocks) have the most natural material to work with since our planet, which weighs about 6.6 sextillion tons, is really a huge ball of rock.

Unlike the chicken and egg controversy, there is not question about whether the camera or the nature photographer comes first. The interest in nature may manifest itself first, but without a camera you don't have a nature photographer. Many a Brownie or Instamatic has incubated a future nature photographer! Invariably those introduced to this specialized photography are amazed with their new found "seeing". The nature photographer focuses not only his camera lens but his full attention on the subject he is photographing - and he sees and perceives as no casual observer can! Very early he realizes he has found a new world overwhelmingly rich with fascinating things - exquisite detailing, astounding variety, unbelievable incongruities, remarkable perfections and imperfections; and a seemingly endless diversity of colors and textures. Nature photography (as is photography itself) is many things: an art, a craft, a sport, a relaxation - and a mania. The nature photographer is a person with an active, searching, inquiring mind. He is more often than not a perfectionist and persistent. He puts his discoveries on film so others too can enjoy his adventures in seeing.



Award Presentations: The winning display award photographs in the First Nature Photography Contest of the St. Louis Audubon Society have finished their year of tour around the metropolitan area. The tour photographs were presented to the winning photographers at the December 3 meeting of the Audubon Nature Photography Section in the Clayton Federal Savings and Loan auditorium, Webster Groves, Missouri. Mrs. Earl Hath made the presentations.



"It's a life bird for me too, you know!"



REPORT ON 1974 BLUEBIRD NESTING BOX STUDY

Burrell and Ruby Pickering

For the seventh consecutive year, The Webster Groves Nature Study Society, as one of its Nature Study Projects, has conducted a sixteen week-end Bluebird Nesting Box Survey at Sunny Ranch in Warren County, Missouri. Detailed information was recorded for each box as to: if occupied, kind of bird, number of eggs, number of young, number fledged and the behavior pattern of the Bluebirds, as well as any unusual observations.

Each week-end, inspection was on a family, teacher and students, or mixed group basis with the groups dividing into two teams to check the two trails of 20 boxes each, a total of 40 boxes. There were 20 boxes on trail three which we checked, making a total of 60 boxes in the survey.

When the first check of the boxes was made on April 20 by the Pat McCormick group, the nesting cycle was well progressed with 27 nests and 61 eggs. The Bluebirds continued to work hard, but the final results were somewhat disappointing: 278 young fledged against 289 for 1973 and 299 for 1972. One of the adverse factors was the weather with a 7 week drought. Another was the loss of eggs from the nests, 55 against 24 last year.

We were so concerned about the disappearance of eggs that we wrote W. G. Duncan, of Louisville, Kentucky, an authority on Bluebirds, explaining our problem: "Our Bluebirds are not doing well this year, something is removing eggs from the nests. The nests are disturbed and some eggs gone from the boxes, but no broken shells or other evidence. All posts have a two-foot band of metal around them so an animal cannot climb the post to the boxes. This should leave out raccoons raiding the nests. We thought our problem might be snakes, and three weeks ago greased all the posts, but still have some loss. Any idea of what could be taking the eggs?"

Mr. Duncan referred our letter to Burt L. Monroe, Jr., Chairman, Department of Biology, University of Louisville, who wrote: "The report of Burrell L. Pickering's trouble re disappearing Bluebird eggs is most fascinating, despite its distressing nature. His precautions seem to remove from suspicion all the normal predators that would remove the eggs intact, leaving no broken shells behind. Properly greased poles should eliminate the most likely predator to cause this amount of egg removal, namely ratsnakes (*Elaphe*). Metal banding effectively eliminates mammalian predators, with the possible exception of squirrels, but I doubt if nest box locations are such that an aerial approach is available to them. Among bird predators, the most likely under the set of circumstances described is the two-legged variety of 'predator', particularly the young and mischievous kind." We have never had any trouble with vandalism so this is not the answer. It may be that the greased posts did not deter the snakes and they were the culprits.

As in past years, House Sparrows continued to be a problem with nest boxes near buildings, but each week, eggs and nests were removed so they added no young to the population. Also, we had no loss of young due to the larvae of the parasitic blowfly (*Apaulina sialia*), which so many writers give as the cause of mortality of young birds. Before the nesting season and later after the first brood nests were removed, powdered sulphur had been put in the boxes, which probably was a good control measure.

Some interesting observations made by the weekly observers were:

NEST BUILDING - the time required to build a nest was usually 5 or 6 days but during the height of the breeding season, one week-end, the box would be empty, but the following week-end it would have a nest and several eggs in it. Both the male and female took part in nest building activity, but usually it was the female that did most of the work. The nests were loose, poorly built structures, but in the snug cavity of the boxes, expert workmanship is not required. The nests were made almost entirely of dried grasses and weed stems with the lining of fine grasses..

EGG LAYING - started soon after the nest was completed and usually contained 4 or 5 eggs. The eggs are ovate and a pale blue.

INCUBATION - started as soon as the last egg was laid and required about 14 days. Several times, observers mentioned that during incubation, the female refused to leave the nest when the box was opened.

YOUNG - grew rapidly and were fully feathered and ready to leave the nest in 15 to 18 days. They were able to fly a short distance on the first try, to some branch and none were found on the ground.

FEEDING - both parents feed the young every few minutes from dawn to dusk, the food consisting almost exclusively of insects. The young are still fed after leaving the nest, usually by the male while the female continues with her next brood.

HOUSEKEEPING - a fine quality of these delightful birds is their cleanliness and good housekeeping. The nests are kept clean and as soon as the eggs hatch, the shells are carried some distance away. Likewise, the droppings of the young are quickly removed from the nest box.

FOOD HABITS - in its food habits, the Bluebird is one of the most useful birds. It does little harm to human interests, feeding almost entirely on insects and thereby destroying large quantities of harmful insects. The vegetable portion of their diet is largely fleshy wild fruit.

That the boxes can be opened and inspected without unduly disturbing the Bluebirds is one of the big surprises of those that do not know their friendliness and patience. Usually, when a box is approached, the adult birds, if present, will silently leave and wait quietly on a nearby limb until the observers leave. Of course, the inspection should be done as quickly and carefully as possible.

We have been asked why the need for Bluebird nesting boxes, and this can be explained by the fact that Bluebirds nest only in cavities, either natural or man-made. Formerly, the sites used consisted of old woodpecker holes and other natural cavities in dead trees and often in wood fence posts having holes in them. Under today's farming practices, dead trees are usually removed and fence posts are of metal. Adequate natural nesting sites for the Bluebirds do not exist with the resulting decline in population. Put up boxes for the friendly Bluebirds, if you can. You will enjoy having them all year, marvel that they carry the deep blue sky on their backs and agree they are rightly called the official bird of the State of Missouri.

RESULTS OF 1974 BLUEBIRD NESTING BOX STUDY AT SUNNY RANCH

EGGS

Total laid	386	Died in nest	13
Infertile or deserted	22	Lost to predators	18
Disappeared from nest	55	Fledged	278
Young hatched	307	Percent eggs laid	72
Percentage	80	Percentage of hatched	90

<u>Bluebird Yearly Comparison Data</u>	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>
Boxes available	40	58	60	60	60
Boxes in which birds nested	28	36	50	45	42
Total nests	46	55	87	89	83
Eggs laid	212	248	393	387	386
Eggs per nest	4.6	4.5	4.5	4.3	4.6
Young fledged	137	195	299	289	278*
Percentage of success	65	79	76	75	72
Average per nest	3.0	3.5	3.4	3.2	3.2

* plus 5 Chickadees fledged

calendar



ST. LOUIS AUDUBON SOCIETY FIELD TRIP SCHEDULE - DECEMBER 1974-JANUARY 1975

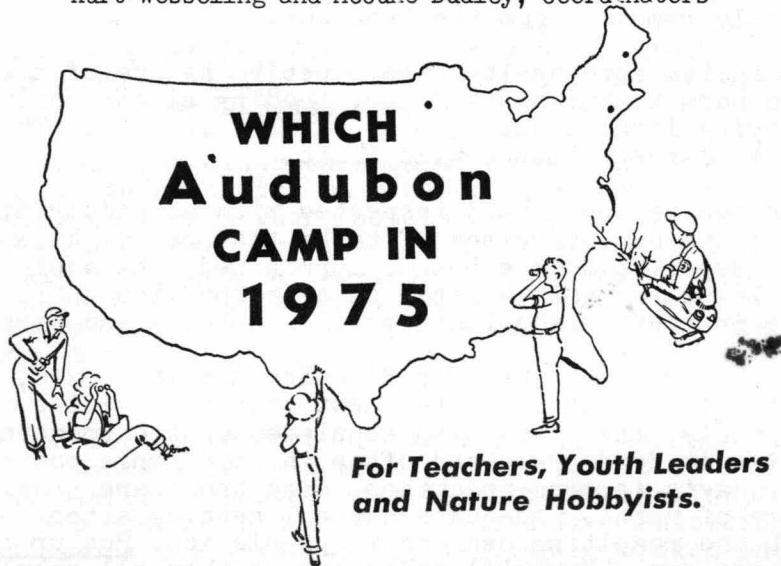
Sunday, December 15, WGNSS Christmas Count, Busch Wildlife Area, 8:00 a.m.
Jim Comfort, Coordinator.

Saturday, December 28, St. Louis Audubon Christmas Count, Boschertown, 8:00 a.m.
Kurt Wesseling, Coordinator. For details call 961-6687.

Saturday, January 11, WGNSS field trip, Busch Wildlife Area, 8:00 a.m.
Catherine Arhos, Leader.

Saturday, January 25, St. Louis Audubon Field Trip, Swan Lake and Pere Marquette Park
area. Meet at Alton Dam parking lot on the Missouri side, 8:00 a.m.
David Jones, Leader. For information call 961-6687.

SATURDAY, FEBRUARY 8th, ST. LOUIS AUDUBON SOCIETY ANNUAL EAGLE COUNT
Kurt Wesseling and McCune Dudley, Coordinators



Eight scholarship winners from St. Louis participated in the education programs offered at the various Audubon Camps in the United States. Illness prevented two of our recipients from accepting their scholarships. Because of the very limited period of time involved, we were able to fill only one vacancy. Fortunately Mr. Frank Erb was able to make the necessary arrangements and attend the Wisconsin Camp. While there he made numerous nature sketches which were photocopied and given to some of the campers. Donations which he received were graciously turned over to the Camp. The camp directors have written in appreciation of the enthusiasm of our participants, and their many contributions to the camp programs.

All the participants have expressed their thanks for being selected to attend the excellent programs offered by the camps. They have also indicated how they will put their experiences to work in the classrooms during the school year, and, as in the past, many young people will gain new insight into the world of nature.

The Audubon camps are located in Wisconsin, Maine, Connecticut and Wyoming. Each camp offers a unique program of ecological and conservation education utilizing the special natural resources of the area. The Wisconsin camp provides an introduction to the land of northern lakes, bogs and forests. The camp in Maine features the sea coast. The ecology workshop of the Connecticut camp offers a variety of scenes including the marshes and the seashore. The Camp of the West is located in the mountains.

Applications for scholarships for the 1975 summer camps are now available. The scholarships offered by the St. Louis Audubon Society pay the tuition of the camp. Participants must provide their own transportation. Applicants must be eighteen years or older and submit one letter of recommendation.

Mail requests to Ed Ortley, 5663 Pernod Avenue, St. Louis, Mo. 63139.